

# ICOM recommendation on Linked Open Data for museums

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ICOM recognises the accelerating trend for cultural resources to become the subject of digital resources. It believes that museums must take control of how their physical holdings are identified on the Web.

This proposal is only concerned with the physical objects in museums. It has no intention of making any statement or recommendation about how related materials are identified.

This proposal is motivated by the recommendations of the Linked Open Data community to identify “non-information resources”. It aims to provide a practical approach for museums to tackle this issue.

1. When museum objects are referred to in Internet applications, it is necessary that the objects are uniquely identified by suitable URIs.
2. In order to avoid different institutions generating competing URIs for the same object, each object (or set of objects) should have one preferred authority that assigns the URI for the object. The URI authority for the object must be known to all interested parties or be easy to discover.
3. The most natural candidate for the URI authority for an object is the museum that curates the object, regardless of whether the museum intends to provide its own services on the Internet or not. This is because it is the only institution that can absolutely determine that two different museum object URIs actually describe the same thing.
4. This URI should be derived in a simple way from the inventory numbers published in exhibition catalogues, through on-line museum catalogue access or by asking museum staff. This will avoid the need go through a matching process that could generate errors.
5. This URI should have a form that enables any museum to provide a Linked Open Data service that resolves to the associated description of that object. This resolution means that there is a service on the Internet, that reacts to such a URI with an http exception *303 See Other*, indicating that this is not the URL of a document. It should then redirect the request to a document, that contains a description of the non-information object (in our case the museum object) meant by the URI. By this means, anybody can easily verify the interpretation of the URI.
6. It should be noted that such a service is not mandatory for the URI to be valid, used and useful. The museum object URI will continue be useful for

communicating uniquely about the object, even if the museum were never to install such an LOD service, or if the way of dealing with LOD resolution requests changes in the future.

7. The way to create the URI should be the following:
  - The museum decides on a base URL that will be extended by the inventory number of the object.
  - The base URL could be within the domain name of the main museum website or be a separate distinct domain name. Such a separate domain name provides continuity even if the domain of the museum website is altered in the future.
  - For larger collections resolving LOD access requests to object information may cause some server load. This can more easily be balanced when using a second domain name.
  
8. Regardless of whether an object is permanently transferred to another museum, or is owned or claimed by multiple museums at the same time, the object remains the same. Therefore the URI should remain the same. The association between the URI and the object is still correct and either the previous, or one of its current curators, will still be able to verify the physical reality behind the URI.
  - Therefore the URI is never "misleading", it makes an association between a curator and an object at some point in time, which, being an historical fact, never changes.
  - The URI must not reflect the custody change for the obvious reason that it will have been used in multiple documents by multiple authors that cannot all be successfully updated. So to change the URI would break all scholarly and public references to the object.
  - Should an object be transferred or sold, the new curator may introduce an additional new URI. This new URI may be resolved by whatever means the new curator desires and will be linked to the previous identifier, as prescribed in the CIDOC/ICOM guidelines for museum documentation.
  - Equally, the previous curator should, but may choose not to, redirect to the new URI.
  
9. If a museum intends to delegate the handling of URIs to another organisation then either:
  - the museum updates its catalogues with the URIs generated by the delegated authority **or**
  - if the delegated authority creates the URIs by following a syntax that uses existing museum identifiers, the museum must publish the syntax.
  - In either case, the delegated authority organisation must have a defined and documented business relationship with the museum that details how to keep both sides consistent. This can only be managed in mutual agreement, and is thus prohibitive for a global organisation.
  
10. This approach suggested is not primarily concerned with the syntax, but with the necessity of having rules governing the best institution for preserving a particular objects identifier. There are three underlying principles:
  - a) The association between the object and the institution must be known, easy to guess or find out for all interested parties.

- b) The institution must be able and willing to resolve disputes about the relationship between the identifier and the identified.
- c) The institution must not be in competition with another institution doing the same job for the same set of objects.

11. In the case that a curating organisation or museum takes no such action, a suitable aggregator may publicise their intention to play the role of a provider of URIs.

- ICOM has no particular proposal as to how such an aggregator may be decided upon, but it could be based on a leading national or community role, or a leading research role for a well-defined set of objects.
- In any such case, it will not be easy to maintain the connection from this aggregator to the museum.
- Such an aggregator must never ignore the wish of a curating institution to provide its own URIs, and must duly publish the mapping of their URIs to those subsequently generated by the curating institution.

#### **Philosophical remarks:**

- I. Such a notion of identity is not affected should the object subsequently lose its qualification as a “museum object” or indeed, is reclassified in any other way.
- II. The identifier is also independent from other identifiers that refer to the same constellation of matter as being two or more objects, or, indeed, as an integral part of another object. In all these cases, the alternative descriptions can be related to each other by “part of” relationships.
- III. Even if two constellations of matter with different identifiers overlap, one can identify the overlapping area as being a shared part of the other two.
- IV. However, the identity is affected, if the object is split into two, or two objects are merged. Such an event would be registered on the site resolving the URI and the new nature of the object(s) can be related to its predecessors using “part-of” relationships.
- V. The identity is not affected, if non-essential parts are added to or removed from the object, if parts are replaced or even if the association of the object with non-essential parts is unclear. Relevant is the curatorial notion that it is still the same object.

#### **Glossary**

- URI: A global identifier suited for use in Internet applications.
- Inventory number: A unique number identifying an object or specimens, including any separated parts. (from SPECTRUM 3.2)
- Uniquely: Possibly many names to at most one object (n-1)

**See also:** <http://linkeddata.org/guides-and-tutorials>